UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

In Reply Refer to:
F-SA-00-1:MEA

NOV 17 2000

Mr. James D. Fenwood
Forest Supervisor
Mendocino National Forest
U.S. Forest Service
825 N. Humboldt Avenue
Willows, California 95988

Dear Mr. Fenwood:

This letter transmits the National Marine Fisheries Service's (NMFS) Biological Opinion based on NMFS' review of the proposed special use permit to run boat racing events and a water skiing competition at Lake Red Bluff, on the Sacramento River and its effects on endangered Sacramento River winter-run chinook salmon (*Oncorhynchus tshawytscha*), threatened Central Valley spring-run chinook salmon (*O. tshawytscha*), and threatened Central Valley steelhead (*O. mykiss*), and their designated critical habitat in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act). The Mendocino National Forest proposes to issue a 5 year special use permit to expand the type and number of powerboat events to be held at Lake Red Bluff.

The enclosed Biological Opinion is based on information provided in: (1) the Biological Assessment, dated January 6, 2000 (provided with your initiation letter); (2) a monitoring report from the 1999 event received on January 24, 2000; and (3) supplemental information regarding the number, frequency and duration of races anticipated during the planned events (received June 22, 2000). A complete administrative record of this consultation is on file in the NMFS Sacramento Area Office.

Based on the best available scientific and commercial information, the enclosed Biological Opinion concludes that issuing the five-year special use permit for drag boat racing, circle racing, and water skiing competition at Lake Red Bluff is not likely to jeopardize the continued existence of Sacramento River winter-run chinook salmon, Central Valley spring-run chinook salmon, or Central Valley steelhead, or result in adverse modification of their critical habitat. However, minimal incidental take of listed species is anticipated in the form of temporary harassment of migrating adults or juveniles. Therefore, an Incidental Take Statement is attached to the Biological Opinion. Reasonable and prudent measures (RPMs) are provided which further

minimize the expected incidental take. In order to be exempt from the prohibitions of section 9 of the Endangered Species Act, the Mendocino National Forest must comply with the terms and conditions which implement the RPMs and are described in part IV of the Incidental Take Statement.

This concludes formal consultation on the action(s) outlined in the request for consultation. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained, or is authorized by law, and if (1) the amount or extent of incidental take statement is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If you have questions concerning this Biological Opinion or the Incidental Take Statement, please contact Mr. Michael Aceituno in our Sacramento Area Office. Mr. Aceituno can be reached by phone at (916) 930-3600.

Sincerely

Rodney R McInnis

for Rebecca Lent, Ph.D.
Regional Administrator

Enclosure

BIOLOGICAL OPINION

Agency: Mendocino National Forest, U.S. Forest Service

Activity: Lake Red Bluff Special Use Permit for Drag Boat Races, Circle Racing, and Water Skiing Competition.

Consultation Conducted By: Southwest Region, National Marine Fisheries Service.

Date Issued: NOV 17 2000

I. BACKGROUND AND CONSULTATION HISTORY

On January 12, 2000, the U.S. Forest Service (USFS), Mendocino National Forest, requested formal consultation on impacts to endangered Sacramento River winter-run chinook salmon and Central Valley spring-run chinook salmon resulting from the proposed issuance of a five year permit to A & J Events L.L.C. expanding the type and number of powerboat events that are permitted to be held at Lake Red Bluff, part of the Sacramento River, near the city of Red Bluff, California.

Forest management direction specific to facilities is described in Chapter IV of the Mendocino Land and Resource Management Plan (LRMP). The National Marine Fisheries Service (NMFS) has issued a biological opinion on the LRMP, dated June 20, 1997. The LRMP established Riparian and Ecosystems standards and guidelines (S&Gs) for each Forest Management Area and Forest-wide S&Gs for each Forest program or resource area (i.e. Wildlife Management, Sensitive Plants).

On April 15, 1998, NMFS issued a Biological Opinion analyzing the effects to endangered Sacramento River Winter-run chinook salmon and threatened Central Valley steelhead from issuing a five-year special use permit, 1998 through 2002, for jet boat races held in Lake Red Bluff. An incidental take statement was attached to this opinion including reasonable and prudent measures (RPM's) to further minimize the expected incidental take and terms and conditions which implement the RPM's. The current request for formal consultation expands the type and number of powerboat events that are permitted to be held at Lake Red Bluff, changes the permit holder from the "International Hotboat Association" to "A & J Events L.L.C.", and proposes to begin the five-year permit in 2000.

A Biological Assessment for salmon and steelhead, dated January 6, 2000, addressing the effects of the proposed action on listed species, was enclosed with the USFS, January 12, 2000 request for formal consultation and provides the basis of this consultation. Subsequent to this

transmittal, additional information regarding the number, frequency, and duration of race events was submitted to NMFS on June 22, 2000.

II. PROPOSED ACTIVITY

The Grindstone Ranger District of the Mendocino National Forest has received a proposal from A & J Events L.L.C. to expand the type and number of powerboat events that are permitted to be held at Lake Red Bluff. The proposal is to 1) authorize continuation of the boat drag racing event, 2) incorporate circle racing into the event, and 3) add a water skiing competition to be held in mid-July. The proposed changes would be authorized under a special use permit for a period of five-years, beginning in 2000.

A boat drag racing event has been held each Memorial Day weekend for several years, and is proposed for renewed authorization. This event involves side-by-side racing by pairs of boats on a quarter mile course laid out in the "Slough" area of Lake Red Bluff. Racing will be run over 2 days during the Memorial Day weekend. The total duration of racing is expected to be 9 hours each day with a 1-hour break for circle racing (see below) and will occur between the hours of 8:00 am and 5:00 pm. Races are run in 2 boat "heats" which average 10 seconds in length with 1½ to 3 minutes between heats. Assuming an average of 2½ minutes between the start of each heat (this is race time plus time between heats) it is estimated that up to 216 heats could be run each day, however, the actual number will depend on the number of competitors registered for the event. The boats are powered by inboard, four-stroke engines, which do not vent exhaust into the water. Fuel tanks are small and are lined internally with a flexible liner to contain fuel in the event of a rupture of the rigid outer tank. Engine and transmission lubricants are sealed against leakage. These features limit the risk of significant contaminant spill in the event that a boat crashes. In addition to the quarter mile race segment, another eighth of a mile is needed for the boats to slow.

Circle racing will occur during a break in the boat drag racing event over the same two days on the Memorial Day weekend. The course is laid out in the same area as the boat drag races. Racing involves up to 8 boats at a time racing around a circular course and is conducted in 10 lap "heats" lasting 1.7 - 2.2 minutes each with 5 - 10 minutes between heats. The total duration of circle racing will be between 45 minutes and 1 hour each day. Assuming an average of 9½ minutes between the start of each heat (this is race time plus time between heats) it is estimated that 4 to 6 heats will be run each day. Circle racing boats are of the same design as those used for drag racing, and incorporate the same fuel/lubricant containment features to minimize the risk of spill in the event of a crash.

Water skiing competition involves a single boat at a time pulling a skier through the course, which is also laid out in the same area as the boat drag racing event and the circle racing events. The skiing competition will take place over two days, between the hours of 8:00 am and 5:00 pm, and would be held in mid-July. The duration of each run in the water ski competition varies depending on the type of event, generally 1 - 3 minutes, with 2 - 6 minutes between runs. The

total number of runs during the competition is dependent on the total number of competitors who entered. Assuming an average of 6 minutes between the start of each run (this is run time plus time between runs) it is estimated that up to100 runs could be completed each day Water ski competition boats are comparable in design to the typical recreational water ski boats, normally used on the lake.

The following applies to boat handling for all three types of events:

1) Put-in and take-out points would be at existing boat ramps;

2) In the event of an accident, containment/cleanup of fuel and lubricants is accomplished by the rescue/cleanup crew immediately after rescue of the boat driver. The crews are equipped with containment and absorbent equipment. The rescue crew uses personal watercraft to accomplish their mission;

3) Fuel would be pumped from drums from an enclosed van truck parked in the paved regular parking area. The dispensing of fuel would be conducted on a tarpaulin that has absorbent berms around the perimeter;

4) All waste fuel, lubricants, and other fluids would be placed in suitable containers pending proper disposal off-site. A recycler contracted by the event sponsor would provide on-site storage.

5) Cleaning of parts is done within each competitor's service trailer, and boats are parked on tarpaulins during servicing in the pit area (the pit area is about 200 feet from the water's edge).

Activities incidental to the boat competition events include the following:

1) Concessionaire Vending - Vending of food and other items would be provided in the spectator area, which is on the lawn. Food concessionaires would be required to connect to a graywater holding bladder. The graywater would be pumped out of the bladder and be disposed of off-site in compliance with local codes;

2) Documentary Filming - Filming of the events for documentary and broadcasting purposes would be done from the ground and the air. A helicopter landing area within the Lake Red Bluff Recreation Area would be used for logistical support of the filming;

3) Parking - Spectator parking would be provided to the east of the main access road;

4) Willow Pruning - The portion of the willows that extend above the top of the bank would be pruned to provide visibility of the race course from the lawn area. This would leave about 3 to 6 feet of the lower stems unpruned;

5) Sanitation - Portable toilets would be brought because the size of the crowds exceeds the capacity of the existing facilities.

III. LISTED SPECIES AND CRITICAL HABITAT

This biological opinion analyzes the effects of the proposed five year Lake Red Bluff special use permit for drag boat racing, circle racing, and water skiing competitions on the following Federally listed species and their designated critical habitats: (1) endangered Sacramento River winter-run chinook salmon (*Oncorhynchus tshawytscha*); (2) threatened Central Valley spring-run chinook salmon (*Oncorhynchus tshawytscha*); and, (3) threatened Central Valley steelhead (*Oncorhynchus mykiss*).

Sacramento River Winter-run Chinook Salmon - Endangered; Population Trends, Life History, and Biological Requirements.

The Sacramento River winter-run chinook salmon (*Oncorhynchus tshawytscha*) is one of four distinct runs of chinook salmon in the Sacramento River and was listed as endangered by NMFS on January 4, 1994 (59 FR 440). Adult winter-run chinook salmon run sizes took a dramatic decline between 1967 and 1980, from an estimated high of 108,855 in 1969 to a low of 84 in 1980. Since 1981 the adult population has stabilized somewhat but has remained at a low level with an average estimated run size of 1,899 adults. The estimated adult winter-run chinook salmon run size for 1999 was 885 adults (CDFG 2000).

Adult winter-run chinook salmon generally leave the ocean and migrate through the Sacramento-San Joaquin Delta to the upper Sacramento River from December through June. Keswick Dam completely blocks any further migration upstream on the Sacramento River to historic winter-run spawning habitat. Since the construction of Shasta and Keswick dams, winter-run chinook spawning has primarily occurred between the Red Bluff Diversion Dam (RBDD) and Keswick Dam. A small number of winter-run chinook spawn in some of the major tributaries of the Sacramento River below Keswick Dam.

The spawning period of winter-run chinook generally extends from mid-April to mid-August with peak activity in recent years from early June through mid-July (Snider 2000). Aerial surveys of spawning redds have shown that the majority of winter-run chinook spawning in the upper Sacramento River occurs between the upper Anderson Bridge at RM 284 and the Anderson-Cottonwood Irrigation District Dam at RM 298. However, some winter-run chinook may also spawn below Red Bluff (RM 245) in some years. In 1988, for example, winter-run chinook redds were observed as far downstream as Woodson Bridge (RM 218).

Winter-run chinook eggs hatch after an incubation period of about 40-60 days depending on ambient water temperatures. Pre-emergent chinook salmon fry remain in the redd and absorb the yolk stored in their yolk-sac as they grow into fry. This period of larval incubation lasts

approximately 2 to 4 weeks depending on water temperatures. Emergence of the fry from the gravel begins during late June and continues through September. The fry seek out shallow, nearshore areas with slow current and good cover, and begin feeding on small terrestrial and aquatic insects and aquatic crustaceans. As they grow to 50 to 75 mm in length, the juvenile salmon move out into deeper, swifter water, but continue to use available cover to minimize the risk of predation and reduce energy expenditure.

The emigration of juvenile winter-run chinook from the upper Sacramento River is highly dependent on streamflow conditions and water year type. Emigration past Red Bluff may begin as early as July, generally peaks in September, and can continue until mid-March in drier years (Vogel and Marine 1991). Data combined from 1981-1992 trapping and seining efforts show that winter-run chinook emigrants occur between early July and early May from Keswick to Princeton (RM 302 to RM 158). Emigration monitoring of Glenn Colusa Irrigation District (GCID) at RM 206 shows that juvenile winter-run chinook migrate past GCID as early as mid-July and may continue through April (HDR Engineering Inc., 1993).

Sacramento River winter-run Chinook Critical Habitat.

On June 16, 1993, NMFS designated critical habitat for Sacramento River winter-run chinook salmon (58 FR 33212). Designated critical habitat includes the Sacramento River from Keswick Dam (RM 302) to Chipps Island (RM 0) at the westward margin of the Sacramento-San Joaquin Delta; all waters from Chipps Island westward to Carquinez Bridge, including Honker Bay, Grizzly Bay, Suisun Bay, and Carquinez Strait; all waters of San Pablo Bay westward of the Carquinez Bridge; and all waters of San Francisco Bay (north of the San Francisco/Oakland Bay Bridge) from San Pablo Bay to the Golden Gate Bridge.

Within the Sacramento River, critical habitat includes the river water, river bottom (including those areas and associated gravel used by winter-run chinook salmon as a spawning substrate), and the adjacent riparian zone used by fry and juveniles for rearing. In areas westward from Chipps Island, including San Francisco Bay to the Golden Gate Bridge, it includes the estuarine water column, essential foraging habitat, and food resources used by the winter-run chinook salmon as part of their juvenile out migration or adult spawning migration.

Central Valley Spring-run Chinook Salmon - Threatened: Population Trends, Life History, and Biological Requirements

Effective November 16, 1999, NMFS listed Central Valley spring-run chinook salmon as threatened under the Endangered Species Act (64 FR 50394). Historically, spring-run chinook salmon were predominant throughout the Central Valley, occupying the upper and middle reaches of the Sacramento River (including the McCloud, and Pit Rivers), Feather River, Yuba River, American River, and the San Joaquin River, with smaller populations in most other tributaries with sufficient habitat for over-summering adults (Stone 1874, Rutter 1904, Clark 1929). The Central Valley drainage as a whole is estimated to have supported spring-run

chinook salmon runs as large as 600,000 fish between the late 1880s and 1940s (California Department of Fish and Game 1998). Following the completion of Friant Dam, the native population from the San Joaquin River and its tributaries was extirpated. Also, spring-run no longer exist in the American River due to Folsom Dam.

Impassable dams block access to most of the historical headwater spawning and rearing habitat of Central Valley spring-run chinook salmon. In addition, much of the remaining, accessible spawning and rearing habitat is severely degraded by elevated water temperatures, agricultural and municipal water diversions, unscreened and poorly screen water intakes, restricted and regulated stream flows, levee and bank stabilization, and poor quality and quantity of riparian and shaded riverine aquatic (SRA) cover.

Natural spawning populations of Central Valley spring-run chinook salmon are currently restricted to accessible reaches in the upper Sacramento River, Antelope Creek, Battle Creek, Beegum Creek, Big Chico Creek, Butte Creek, Clear Creek, Deer Creek, Feather River, Mill Creek, and Yuba River (DFG 1998; USFWS, unpublished data). With the exception of Butte Creek and the Feather River, these populations are relatively small ranging from a few fish to several hundred. Butte Creek returns in 1998 and 1999 numbered approximately 20,000 and 3,600, respectively (DFG unpublished data).

Spring-run chinook salmon adults are estimated to leave the ocean and enter the Sacramento River from March to July (Myers et al. 1998). When they enter freshwater, spring-run chinook salmon are immature and they must stage for several months before spawning. Their gonads mature during their summer holding period in freshwater. Over-summering adults require cold-water refuges such as deep pools to conserve energy for gamete production, redd construction, spawning, and redd guarding.

Spawning typically occurs between late-August and early October with a peak in September. Once spawning is completed, adult spring-run chinook salmon die. Spawning typically occurs in gravel beds that are located at the tails of holding pools (U.S. Fish and Wildlife Service(USFWS) 1995). Eggs are deposited within the gravel where incubation, hatching, and subsequent emergence takes place.

Length of time required for eggs to develop and hatch is dependant on water temperature and is quite variable, however, hatching generally occurs within 40 to 60 days of fertilization (Vogel and Marine 1991). In Deer and Mill creeks, embryos hatch following a 3-5 month incubation period (USFWS 1995).

After hatching, pre-emergent fry remain in the gravel living on yolk-sac reserves for another two to four weeks until emergence. Timing of emergence within different drainages is strongly influenced by water temperature. Emergence of spring-run chinook typically occurs from November through January in Butte and Big Chico Creeks and from January through March in Mill and Deer Creeks (DFG 1998).

Post-emergent fry seek out shallow, near shore areas with slow current and good cover, and begin feeding on small terrestrial and aquatic insects and aquatic crustaceans. As they grow to 50 to 75 mm in length, the juvenile salmon move out into deeper, swifter water, but continue to use available cover.

In Deer and Mill creeks, juvenile spring-run chinook, during most years, spend 9-10 months in the streams, although some may spend as long as 18 months in freshwater. Most of these "yearling" spring-run chinook move downstream in the first high flows of the winter from November through January (USFWS 1995, DFG 1998). In Butte and Big Chico creeks, spring-run chinook juveniles typically exit their natal tributaries soon after emergence during December and January, while some remain throughout the summer and exit the following fall as yearlings. In the Sacramento River and other tributaries, juveniles may begin migrating downstream almost immediately following emergence from the gravel with emigration occurring from December through March (Moyle, et al. 1989, Vogel and Marine 1991). Fry and parr may spend time rearing within riverine and/or estuarine habitats including natal tributaries, the Sacramento River, non-natal tributaries to the Sacramento River, and the Sacramento-San Joaquin Delta.

In preparation for their entry into a saline environment, juvenile salmon undergo physiological transformations known as smoltification that adapt them for their transition to salt water (Hoar 1976). These transformations include different swimming behavior and proficiency, lower swimming stamina, and increased buoyancy that also make the fish more likely to be passively transported by currents (Saunders 1965, Folmar and Dickhoff 1980, Smith 1982). In general, smoltification is timed to be completed as fish are near the fresh water to salt water transition. Too long a migration delay after the process begins is believed to cause the fish to miss the "biological window" of optimal physiological condition for the transition (Walters et al. 1978).

Chinook salmon spend between one and four years in the ocean before returning to their natal streams to spawn (Myers et al. 1998). Fisher (1994) reported that 87% of returning spring-run adults are three-years-old based on observations of adult chinook trapped and examined at Red Bluff Diversion Dam between 1985 and 1991.

Central Valley Spring-run Chinook Salmon Critical Habitat

On February 16, 2000 NMFS designated critical habitat for Central Valley spring-run chinook salmon(65 FR 7764). Critical habitat consists of the water, substrate, and adjacent riparian zone of accessible estuarine and riverine reaches. Accessible reaches are those within the historical range of Central Valley spring-run chinook salmon that can still be occupied by any life stage. Inaccessible reaches are those above longstanding, naturally impassable barriers (i.e., natural waterfalls in existence for at least several hundred years) and specific dams within the historical range of spring-run salmon. Adjacent riparian zones are defined as those areas within a slope distance of 300 feet from the normal line of high water of a stream channel or adjacent off-channel habitats (600 feet when both sides of the channel are included).

Critical habitat for Central Valley spring-run chinook is designated to include all river reaches accessible to chinook salmon in the Sacramento River and its tributaries in California. Also included are river reaches and estuarine areas of the Sacramento-San Joaquin Delta, all waters from Chipps Island westward to Carquinez Bridge, including Honker Bay, Grizzly Bay, Suisun Bay, and Carquinez Strait, all waters of San Pablo Bay westward of the Carquinez Bridge, and all waters of San Francisco Bay (north of the San Francisco/Oakland Bay Bridge) from San Pablo Bay to the Golden Gate Bridge. Excluded are areas above specific dams or above longstanding naturally impassable barriers.

Central Valley Steelhead - Threatened: Population Trends, Life History, and Biological Requirements

On March 19, 1998 NMFS listed Central Valley steelhead as threatened under the Endangered Species Act (63 FR 13347). Central Valley steelhead once ranged throughout most of the tributaries and headwaters of the Sacramento and San Joaquin basins prior to dam construction, water development, and watershed disturbance of the 19th and 20th centuries (McEwan and Jackson 1996). Historical documentation exists that show steelhead were once widespread throughout the San Joaquin River system (CALFED 1999). In the early 1960s, the California Fish and Wildlife Plan estimated a total run size of about 40,000 adults for the entire Central Valley including San Francisco Bay (DFG 1965). The annual run size for Central Valley steelhead in 1991-92 was probably less than 10,000 fish based on dam counts, hatchery returns and past spawning surveys (McEwan and Jackson 1996).

Estimates of steelhead historical habitat can be based on estimates of salmon historical habitat. The extent of habitat loss for steelhead is probably greater than losses for salmon, because steelhead go higher into the drainages than do chinook salmon (Yoshiyama et al. 1996). Clark (1929) estimated that originally there were 6,000 miles of salmon habitat in the Central Valley system and that 80% of this habitat had been lost by 1928. Yoshiyama et al. (1996) calculated that roughly 2,000 miles of salmon habitat was actually available before dam construction and mining, and concluded that 82% of what was present is not accessible today. Clark (1929) did not give details about his calculation. Whether Clark's or Yoshiyama's calculation is used, only remnants of the former steelhead range remain accessible today in the Central Valley.

As with Central Valley spring-run chinook salmon, impassable dams block access to most of the historical headwater spawning and rearing habitat of Central Valley steelhead. In addition, much of the remaining, accessible spawning and rearing habitat is severely degraded by elevated water temperatures, agricultural and municipal water diversions, unscreened and poorly screen water intakes, restricted and regulated stream flows, levee and bank stabilization, and poor quality and quantity of riparian and SRA cover.

At present, wild steelhead stocks appear to be mostly confined to upper Sacramento River tributaries such as Antelope, Deer, and Mill creeks and the Yuba River (McEwan and Jackson 1996). Naturally spawning populations are also known to occur in Butte Creek, and the upper

Sacramento, Feather, American, Mokelumne, and Stanislaus Rivers (CALFED 1999). However, the presence of naturally spawning populations appears to correlate well with the presence of fisheries monitoring programs, and recent implementation of new monitoring efforts has found steelhead in streams previously thought not to contain a population, such as Auburn Ravine, Dry Creek, and the Stanislaus River. It is possible that other naturally spawning populations exist in Central Valley streams, but are undetected due to lack of monitoring or research programs (Interagency Ecological Program (IEP), Steelhead Project Work Team 1999).

All Central Valley steelhead are currently considered winter-run steelhead (McEwan and Jackson 1996), although there are indications that summer steelhead were present in the Sacramento River system prior to the commencement of large-scale dam construction in the 1940's (IEP Steelhead Project Work Team 1999). Adult steelhead migrate upstream in the Sacramento River mainstem from July through March, with peaks in September and February (Bailey 1954; Hallock et al. 1961). The timing of upstream migration is generally correlated with higher flow events, such as freshets or sand bar breaches, and associated lower water temperatures. The preferred temperatures for upstream migration are between 46° F and 52° F (Reiser and Bjornn 1979, Bovee 1978, Bell 1986).

Spawning may begin as early as late December and can extend into April with peaks from January through March (Hallock et al. 1961). Unlike chinook salmon, not all steelhead die after spawning. Some may return to the ocean and repeat the spawning cycle for two or three years; however, the percentage of repeat spawners is generally low (Busby et al. 1996). Steelhead spawn in cool, clear streams featuring suitable gravel size, depth, and current velocity. Intermittent streams may be used for spawning (Barnhart 1986; Everest 1973).

Length of time required for eggs to develop and hatch is dependant on water temperature and is quite variable; hatching varies from about 19 days at an average temperature of 60° F to about 80 days at an average of 42° F. Egg mortality may begin at temperatures above 56° F (McEwan and Jackson 1996).

After hatching, pre-emergent fry remain in the gravel living on yolk-sac reserves for another four to six weeks, but factors such as redd depth, gravel size, siltation, and temperature can speed or retard this time (Shapovalov and Taft 1954). Upon emergence, steelhead fry typically inhabit shallow water along perennial stream banks. Older fry establish territories which they defend. Stream side vegetation is essential for foraging, cover, and general habitat diversity. Steelhead juveniles are usually associated with the bottom of the stream. In winter, they become inactive and hide in available cover, including gravel or woody debris.

The majority of steelhead in their first year of life occupy riffles, although some larger fish inhabit pools or deeper runs. Juvenile steelhead feed on a wide variety of aquatic and terrestrial insects, and emerging fry are sometimes preyed upon by older juveniles.

After spending one to three years in freshwater, juvenile steelhead migrate downstream to the ocean. Most Central Valley steelhead migrate to the ocean after spending two years in freshwater (Hallock et al. 1961, Hallock 1989). Barnhart (1986) reported that steelhead smolts in California range in size from 14 to 21 cm (fork length). In preparation for their entry into a saline environment, juvenile steelhead undergo physiological transformations known as smoltification that adapt them for their transition to salt water. These transformations include different swimming behavior and proficiency, lower swimming stamina, and increased buoyancy that also make the fish more likely to be passively transported by currents (Saunders 1965, Folmar and Dickhoff 1980, Smith 1982). In general, smoltification is timed to be completed as fish are near the fresh water to salt water transition. Too long a migration delay after the process begins is believed to cause the fish to miss the "biological window" of optimal physiological condition for the transition (Walters et al. 1978). Hallock et al. (1961) found that juvenile steelhead in the Sacramento Basin migrated downstream during most months of the year, but the peak period of emigration occurred in the spring, with a much smaller peak in the fall.

Steelhead spend between one and four years in the ocean (usually one to two years in the Central Valley) before returning to their natal streams to spawn (Barnhart 1986, Busby et al. 1996).

Central Valley Steelhead Critical Habitat

On February 16, 2000 NMFS designated critical habitat for Central Valley steelhead (65 FR 7764). Critical habitat consists of the water, substrate, and adjacent riparian zone of accessible estuarine and riverine reaches. Accessible reaches are those within the historical range of the Central Valley steelhead that can still be occupied by any life stage. Inaccessible reaches are those above longstanding, naturally impassable barriers (i.e., natural waterfalls in existence for at least several hundred years) and specific dams within their historical range.

Critical habitat for Central Valley steelhead is designated to include all river reaches accessible to listed steelhead in the Sacramento and San Joaquin Rivers and their tributaries in California. Also included are river reaches and estuarine areas of the Sacramento-San Joaquin Delta, all waters from Chipps Island westward to Carquinez Bridge, including Honker Bay, Grizzly Bay, Suisun Bay, and Carquinez Strait, all waters of San Pablo Bay westward of the Carquinez Bridge, and all waters of San Francisco Bay (north of the San Francisco/Oakland Bay Bridge) from San Pablo Bay to the Golden Gate Bridge. Excluded are areas of the San Joaquin River upstream of the Merced River confluence and areas above specific dams or above longstanding naturally impassable barriers.

IV. ENVIRONMENTAL BASELINE

The environmental baseline is an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species, its habitat, and ecosystem within the action area (USFWS and NMFS 1998). The action area for this consultation is Lake Red Bluff (including Sand Slough), an impoundment on the Sacramento River which is located

immediately east of the city of Red Bluff in the northern Sacramento Valley. Lake Red Bluff is formed when the gates at the Red Bluff Diversion Dam (RBDD) are closed. The RBDD is currently operated according to the NMFS' 1993 winter-run chinook salmon biological opinion, reasonable and prudent alternative number 6 which specifies that the gates are to be raised from September 15 through May 14. This is to provide unimpeded upstream and downstream passage for winter-run chinook salmon. The gates are generally closed between mid-May and mid-September for the spring/summer irrigation and recreation seasons at lake Red Bluff.

A. Status of the Listed and Proposed Species and Critical Habitat in the Action Area

Sacramento River winter-run chinook salmon. The action area is located within critical habitat of the Sacramento River winter-run chinook salmon. The essential elements of critical habitat in the action area consists of the water, substrate, and adjacent riparian zone. Sacramento winter-run chinook salmon are found in the action area seasonally as adults, fry and juveniles.

Adult winter-run migrate to the upper Sacramento River from December through June, with the peak occurring in March and April. The majority of the adult winter-run upstream migrants will pass through the action area prior to Memorial Day weekend, however, a small percentage (estimated to be less than 17%) will still be migrating through June (DFG, unpublished data). These fish will likely encounter the RBDD gates in the closed position, which may delay or block further migration upstream. Those successful at finding the fish ladders at the RBDD will continue to migrate through the action area during the Memorial Day races. Upstream migration of adult winter-run is expected to have been completed prior to the mid-July event.

Winter-run chinook salmon spawning in the Sacramento River generally occurs between Keswick Dam (river mile 302) and Bend Bridge (river mile 239). In 1999, the California Department of Fish and Game reported the majority of winter-run spawning (96.5%) occurred between the ACID Dam (river mile 298) and the upper Anderson bridge (river mile 284)(DFG 2000). No spawning has been observed within the action area.

Eggs incubate for approximately two months, depending on water temperatures, with fry emergence occurring in early July and continuing through September. Upon emergence, fry redistribute themselves downstream. Emigration of juvenile winter-run chinook salmon from the Upper Sacramento River is highly dependent on streamflow conditions and water type. Juvenile chinook salmon capture data collected at Red Bluff Diversion Dam between 1978 and 1989 demonstrate most winter-run chinook salmon pass the dam between August and October (DFG published data 1991). Low numbers of juvenile winter-run have been found in Lake Red Bluff as early as mid-July (J. Smith, personal communication).

Central Valley spring-run chinook salmon. The action area is located within designated critical habitat of Central Valley spring-run chinook. Designated critical habitat within the action area ranges is primarily riverine habitat. The essential elements of critical habitat in this area consists of the water, substrate, and adjacent riparian zone.

A small population of spring-run chinook salmon may persist within the action area, however, under current conditions, it appears that this portion of the population is not thriving. In addition, there is some question as to the genetic integrity of these fish due to the overlap with fall-run spawning and possible hybridization. Adult spring-run chinook salmon pass through the Lake Red Bluff area primarily April through October with approximately 46% of the run passing through the area prior to August 1st. Redd surveys of spawning habitat in the Sacramento River mainstem have found little spawning in August or September when spring-run chinook salmon historically spawned within this area (CDFG 1998). Juvenile spring-run migrate through the Lake Red Bluff area from December through May with the majority (greater than 90%) passing through in December and January. Recent surveys indicate that less than 1% of migrating juvenile spring-run pass through the area after May 1st (USFWS, 1997).

Central Valley steelhead. The action area is located within designated critical habitat of the Central Valley steelhead. Designated critical habitat within the action area ranges from riverine habitat to estuarine areas. The essential elements of critical habitat in these areas are the water, substrate, and adjacent riparian areas.

The peak migration of adult steelhead through the Lake Red Bluff area occurs in September and October with generally less than 3% of the total migrating adults passing the area during May, June and July. Although an accurate estimate of current steelhead abundance in the Central Valley is not available, estimates based on counts at the Red Bluff Diversion Dam indicate that approximately 20% of the population migrates to the upper Sacramento River (and through the Lake Red Bluff area). Steelhead counts at the Red Bluff Diversion Dam have averaged 2,202 adults annually in the 1990's (USFWS 1997). Fry and juvenile steelhead rear year round remaining in freshwater several years before emigrating to the sea. Emigration of juvenile steelhead past the Lake Red Bluff area occurs throughout the year with the peak (greater than 52%) from January through March. During the months of May, June and July, approximately 14% of juvenile steelhead emigrating from the upper Sacramento River pass through the Lake Red Bluff area (USFWS 1997).

B. Factors Affecting Species Environment within the Action Area

The essential features of freshwater salmonid habitat include adequate (1) substrate; (2) water quality; (3) water quantity; (4) water temperature; (5) water velocity; (6) cover/shelter; (7) food; (8) riparian vegetation; (9) space; and (10) safe passage conditions. These features have been affected by human activities such as water management, flood control, agriculture, and urban development within the action area. Impacts to these features have led to salmonid population declines significant enough to warrant the listing of several salmonid species in the Central Valley of California.

High water quality and quantity are essential for survival, growth, reproduction, and migration of individuals dependent on riparian and aquatic habitats. Important water quality elements include flows adequate to support the migratory, rearing, and emergence needs of fish and other aquatic

organisms. Desired flow conditions for salmonids include an annual abundance of cool, well-oxygenated water with low levels of suspended and deposited sediments or other pollutants that could limit primary production and/or invertebrate abundance and diversity.

Habitat Impacts in the Sacramento River Basin. Profound alterations to the riverine habitat of the Central Valley began with the discovery of gold in the middle of the last century. Dam construction, water diversion, and hydraulic mining soon followed, launching the Central Valley into the era of water manipulation and coincident habitat degradation.

About 150 years ago, the Sacramento River was bordered by up to 500,000 acres of riparian forest, with bands of vegetation literally spreading four to five miles (Resources Agency 1989). By 1979, riparian habitat along the Sacramento River diminished to 11,000-12,000 acres or about 2 percent of historic levels (McGill 1979). More recently, about 16,000 acres of remaining riparian vegetation has been reported (McGill 1987). The degradation and fragmentation of riparian habitat has resulted mainly from flood control and bank protection projects, together with the conversion of riparian land to agriculture (Jones and Stokes Associates 1993). In addition, alteration of the Sacramento River's natural flow regime following construction of Shasta Dam has impaired the regeneration of riparian vegetation. Historically, the seasonal flow patterns included high flood flows in the winter and spring with declining flows throughout the summer and early fall. As flows declined during the summer, the seeds from willows and cottonwood trees, deposited on the recently created sand bars, would germinate, sprout, and grow to maturity. The roots of these plants would follow the slowly receding water table, allowing the plants to become firmly established before the next rainy season.

Hydropower and flood control dams have permanently blocked or hindered salmonid access to historical spawning and rearing grounds. Downstream effects of these dams include significant alteration of flow regimes, riparian functions and quality, and primary productivity of the stream. Diversion and storage of natural flows have altered the natural cycles by which juvenile and adult salmonids base their migrations and have also depleted river flows. Depleted flows have contributed to higher temperatures, lower dissolved oxygen levels, and decreased gravel and large woody debris recruitment.

Increased sedimentation resulting from agricultural and urban practices within the Central Valley is a primary cause of salmonid habitat degradation. Sedimentation has adversely impacted salmonids during all freshwater life stages by clogging, or abrading gill surfaces; adhering to eggs; inducing behavioral modifications; burying eggs or alevins; scouring and filling pools and riffles; reducing primary productivity and photosynthetic activity; and affecting intergravel permeability and dissolved oxygen levels. Embedded substrates have reduced the production of juvenile salmonids and hindered the ability of some over-wintering juveniles to hide in the gravels during high flow events. Increased sedimentation has also been shown to increase water temperatures, thereby directly impacting incubating and rearing salmonids.

Land use activities associated with road construction, urban development, logging, mining, agriculture, and recreation have significantly altered fish habitat quantity and quality through alteration of streambank and channel morphology; alteration of ambient stream water temperatures; degradation of water quality; elimination of spawning and rearing habitat; fragmentation of available habitats; elimination of downstream recruitment of gravel and large woody debris; and removal of riparian vegetation resulting in increased streambank erosion. Agricultural practices have eliminated large trees and logs and other woody debris that would have been otherwise recruited to the stream channel. Large woody debris influences stream morphology by affecting pool formation, channel pattern and position, and channel geometry. In addition, unscreened water diversions for agriculture and municipal use have adversely affected salmonids through direct entrainment of emigrating juveniles.

Preliminary, significant steps towards the largest ecological restoration project yet undertaken in the United States have occurred during the past four years and continue to proceed in California's Central Valley. The CALFED Program and the CVPIA's AFRP, in coordination with other Central Valley efforts, have implemented numerous habitat restoration actions that benefit Central Valley steelhead, Central Valley spring-run chinook salmon, and their designated critical habitat. These restoration actions include the installation of fish screens, modification of barriers to improve fish passage, and habitat acquisition and restoration. The majority of these recent restoration actions address key factors for decline of these ESUs and emphasis has been placed in tributary drainages with high potential for steelhead and spring-run chinook production. Additional actions that are currently underway that benefit Central Valley steelhead and Central Valley spring-run chinook include new efforts to enhance fisheries monitoring and conservation actions to address artificial propagation.

A beneficial action unrelated to the CALFED Program or AFRP includes the Environmental Protection Agency's remedial actions at Iron Mountain Mine. The completion of a state-of-the-art lime neutralization plant is successfully removing significant concentrations of toxic metals in acidic mine drainage from the Spring Creek Watershed. Containment loading into the upper Sacramento River from Iron Mountain Mine has shown measurable reductions since the early 1990's.

Beginning in 1986, operation of the RBDD was modified to allow unimpeded passage of most winter-run chinook salmon. Current operations have the diversion dam gates closed only from mid-May through mid-September. Lake Red Bluff is formed when the gates are closed. Fishways at the RBDD provide passage over the structure when the gates are closed.

NMFS anticipates that a few adult winter-run and/or spring-run chinook salmon may be migrating through Lake Red Bluff during the Memorial Day races, but not during the July races. Juvenile winter-run may be present in Lake Red Bluff during the July event, but not during the Memorial Day races. Peak emigration of juvenile winter-run generally occurs well after the July event. Recent surveys indicate that less than 1% of migrating juvenile spring-run chinook salmon pass through the Lake Red Bluff area after May 1st and none were observed during June and July

(USFWS, 1997). Therefore, NMFS anticipates that a very few juvenile spring-run may be present during the Memorial Day races with none present during the July event.

NMFS also anticipates that a few adult steelhead may be migrating through the Lake Red Bluff area during the Memorial Day races and the July event. Recent estimates of steelhead passage past the Red Bluff Diversion Dam indicate approximately 1% or less (< 22 fish) migrating through the area during each event. Steelhead juveniles are anticipated to be present within the action area although an accurate estimate of the total numbers are not available. In general it is estimated that less than 20% of the total Central Valley steelhead juvenile population occurs above the Red Bluff Diversion Dam(RBDD) and is distributed throughout the 59 river miles between the RBDD and Keswick Dam. Assuming these fish are distributed evenly throughout the upper Sacramento River (above the RBDD) NMFS anticipates that less than 0.4% of the juvenile steelhead population in the Central Valley will be affected by the boat races. Emigrating juvenile steelhead are anticipated to be passing through the Lake Red Bluff area during May, June and July with the majority of these passing through in July. These fish represent approximately 14% of the total juvenile steelhead emigrating through the action area during the year. Based on recent surveys (USFWS 1997), the NMFS anticipates that approximately 5% of emigrating juvenile steelhead may be in the action area during the Memorial Day event and approximately 10% during the July event

V. ASSESSMENT OF IMPACTS

Direct and Indirect Effects: The proposed boat races and water ski events will occur during part of the upstream migration of Sacramento River winter-run or Central Valley spring -run chinook salmon, at a time when these fish must pass through the fishway at the Red Bluff Diversion Dam. Increased noise and boat activity may delay adult migration during the 2 days of the Memorial Day weekend event and the 2 days of the planned water skiing event in mid-July. Observations of the effects of passing jet boats on spawning sockeye salmon in Alaska found they seldom responded in any observable way, except when the boat passed only a few feet away. Even then, fish scattered briefly and returned to their original position after the boat had passed (Horton 1994). The total duration of racing during the planned boating events is estimated to be 9 to 10 hours each day. If boating activity is constant during these days it is anticipated that any fish present may leave the area completely, although they would be expected to return once the events are completed.

Both the Memorial Day weekend event and the mid-July event occur during a period when juvenile salmon or steelhead may be present in Lake Red Bluff. Boat noise and increased boat activity may harass juvenile salmonids they encounter, including winter-run and spring-run chinook salmon and steelhead. However, the events will take place in Sand Slough, a backwater area of the lake believed to contain fewer salmonids than would occur in the main channel of Lake Red Bluff (J. Smith, personal communication).

Boat noise (engine noise, propeller and shaft noise, and hull resonance) generated during the events may disturb juvenile salmonids. Recent studies by Knudsen et al (1997) observed strong flight responses in juvenile Pacific salmon exposed to very low frequency sound (<20Hz). Tests on emigrating salmon smolts found that few passed an operating 10 Hz sound source but that a higher frequency sound source (150 Hz) had no evident effect on emigration (Enger et al 1992). No information is available regarding the noise level during the planned boating events. However, it is anticipated that noise generated during the events may cause juvenile salmonids to avoid Sand Slough (where the events will actually be held), possibly moving to the main river channel of Lake Red Bluff. Once the events are over it is expected that fish may again use San Slough as they had prior to the events.

Boat wakes may cause significant erosion of unprotected banks along Lake Red Bluff and portions of the Sacramento River. Excessive bank erosion and use of standard bank stabilization methods, if necessary, could hinder the development, establishment or re-establishment of riparian vegetation or shaded riverine aquatic (SRA) . However, an evaluation of the effects of the 1999 races on riparian vegetation along Lake Red Bluff found no significant damage, and the integrity and function of riparian vegetation along the shoreline bordering the event area was not adversely affected (Mendocino NF memorandum, June 21, 1999). NMFS expects similar results in the future.

Cumulative Effects: Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

The Mendocino National Forest facility at Lake Red Bluff provides for many recreational opportunities and visitor use is steadily increasing. Recreational uses include lake and river oriented activities such as boating, water skiing, fishing and swimming. The proposed boat racing events will occur during 2 days over the Memorial Day weekend and the water skiing competition over 2 days in mid-July. An increase in use of Lake Red Bluff during these events by boaters is anticipated along with an increase in the number of spectators lining the shoreline of the competition area (Sand Slough) to observe the events.

V. CONCLUSION

After reviewing the best scientific and commercial data available, including the environmental baseline, the effects of the proposed project, and the cumulative effects, it is NMFS' biological opinion that the issuance of a five year special use permit for boat drag races, circle racing and water skiing competition at Lake Red Bluff, by the Mendocino National Forest is not likely to jeopardize the continued existence of endangered Sacramento River winter-run chinook salmon, threatened Central Valley spring-run chinook salmon, or threatened Central Valley steelhead or result in the destruction or adverse modification of their designated critical habitat.

Notwithstanding this conclusion NMFS anticipates that some actions associated with the boat drag races, circle boat races, and water skiing competition may result in incidental take of these species. This is based on the likelihood that the proposed boat races and water skiing competition may harass adult and juvenile salmon or steelhead occupying the area during the events. Therefore, an incidental take statement is included with this Biological Opinion for these actions.

INCIDENTAL TAKE STATEMENT

Take is defined as to harass, harm, pursue, hunt, shoot, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Harm is further defined to include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, mitigation, feeding, or sheltering. Incidental take is defined as take of a listed animal species that results from, but is not the purpose of, the carrying out of an otherwise lawful activity.

Section 7 (b)(4) of the ESA provides for the issuance of an incidental take statement for the agency action if the biological opinion concludes that the proposed action is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of critical habitat. In such a situation, NMFS will issue an incidental take statement specifying the impact of any incidental taking of endangered or threatened species, providing for reasonable and prudent measures that are necessary to minimize impacts, and setting forth the terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures. Incidental takings resulting from the agency action, including incidental takings caused by activities authorized by the agency, are authorized under the incidental take statement only if those takings are in compliance with the specified terms and conditions.

This incidental take statement is applicable to all activities authorized by the USFS under the five year special use permit for boat drag races, circle races, and water skiing competitions in Lake Red Bluff. Unless modified, this incidental take statement does not cover permit activities not described and assessed within this opinion.

I. Amount or Extent of Take

NMFS anticipates incidental take of endangered Sacramento River winter-run chinook salmon, threatened Central Valley Spring-run chinook salmon, or threatened Central Valley steelhead will occur as a result of this proposed action. The incidental take is expected to in the form of temporary harassment of migrating adults and/or juveniles. The magnitude of incidental take will be difficult to detect, however, due to the low numbers of these species expected within the planned competition area and the variability and uncertainty in population size, run size, and timing of migrations through Lake Red Bluff. Temporary harassment is anticipated to result

from increased boat noise and water disturbance causing all adult and juvenile salmonids to avoid Sand Slough during the 2 day drag and circle racing event over Memorial Day weekend and the 2 day water ski event in mid-July, utilizing the main channel of the Sacramento River within Lake Red Bluff instead.

In addition, incidental take is anticipated during beach seining as part of monitoring conducted by the U.S. Fish and Wildlife Service (USFWS) (see section IV(2)(a)) which will be in the form of capture, injury and possible mortality. However, the USFWS monitoring program is part of an ongoing research effort already permitted under the USFWS' Section 10(a)(1)(A) permit, and therefore this incidental take is already covered by that permit.

II. Effect of the Take

In the accompanying biological opinion, NMFS determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

III. Reasonable and Prudent Measures

The NMFS believes the following reasonable and prudent measures are necessary and appropriate to minimize take of Sacramento River winter-run chinook salmon, Central Valley spring-run chinook salmon, and Central Valley steelhead:

1. **The USFS shall minimize boat noise and water disturbance during the boat racing and water skiing events.**

2. **Measures shall be taken to monitor and report the incidental take of listed species and/or adverse modification to designated critical habitat.**

IV. Terms and Conditions

In order to be exempt from the prohibitions of Section 9 of the ESA, the USFS must comply with the terms and conditions, which implement the reasonable and prudent measures described above. The terms and conditions are non-discretionary.

1. **The USFS shall minimize boat noise and water disturbance during the boat racing and water skiing events.**

Terms and conditions:

a) Boat handling for the racing events and water skiing competition shall follow the applications specified in part IV (Description of Proposed Project) of the Biological

Assessment, dated January 6, 2000, submitted with the USFS letter of January 12, 2000 requesting formal consultation.

b) Activities incidental to the boat competition events, including concessionaire vending, documentary filming, parking, willow pruning, and sanitation, shall follow the applications specified in part IV (Description of Proposed Project) of the Biological Assessment, dated January 6, 2000, submitted with the USFS letter of January 12, 2000 requesting formal consultation.

c) Boats involved in the racing competition shall stay within the confines of Sand Slough and not use the main channel of the Sacramento River.

d) Boat race events shall only occur during the Memorial Day weekend and water skiing competition only during mid-July.

2. Measures shall be taken to monitor and report the incidental take of listed species and/or adverse modification to designated critical habitat.

Terms and conditions:

a) The following historical data analyses and monitoring activities shall be implemented in cooperation with the U.S. Fish and Wildlife Service, Red Bluff Office.

1) An analysis of available downstream migrant data to produce the following graphs for each year data is available: number and percent of fish passing vs. time of year; cumulative percent of fish passage vs. time of year. This will provide information on the proportion of the juvenile populations in the race area during the events.

2) An analysis of available downstream migrant data for the periods from two days before through two days after the events to detect any change in fish passage rates that could be caused by the events. This will only provide information on whether the passage of individual juveniles is influenced adversely by the event. However, the analysis from item 1 can provide a context for evaluating the importance of any detected effects on the population as a whole.

3) An analysis of the adult fish count data to produce annual graphs as for the downstream migrant data. This will provide key information on the proportion of the adult populations in the race area during the events.

4) An analysis of the adult fish count data annually for the periods from two days before through two days after the events to detect any change in fish passage rates that could be caused by the events. This will only provide information on whether the passage of individual adults is influenced adversely by the event. However, the

analysis from item 3 can provide a context for evaluating the importance of any detected effects on the population as a whole.

5) Conduct beach seining within Lake Red Bluff, including the competition area, one day prior to, and one day after the events. The objective is to provide information on whether juvenile distribution within Lake Red Bluff and the competition area is influenced adversely by the events. The analysis from item 1 can provide a context for evaluating the importance of any detected effects on the population as a whole.

b) The information generated by these monitoring activities shall be provided to the National Marine Fisheries Service (NMFS) in the form of an annual report. Two copies of this annual report shall be sent to NMFS no later than October 31st of each year. One copy of the annual report shall be sent to:

Regional Administrator
National Marine Fisheries Service
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802

and the second copy shall be sent to;

Supervisor, Sacramento Area Office
National Marine Fisheries Service
Protected Resources Division
650 Capitol Mall, Suite 6070
Sacramento, California 95814-4706

In the event that the analysis indicates that either of the events is threatening the continued existence of any of the fish species covered in this biological opinion, the Forest Service shall modify or eliminate the events as necessary to eliminate the threat.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. These "conservation recommendations" include discretionary measures that the USFS can take to minimize or avoid adverse effects of a proposed action on a listed species or critical habitat or regarding the development of information. In addition to the terms and conditions of the Incidental Take Statement (included following Part VII of this opinion), the NMFS provides the following conservation recommendations that would reduce or avoid adverse impacts on the Sacramento River winter-run chinook salmon, Central Valley spring-run chinook salmon, and Central Valley steelhead.

1. The USFS should support and promote aquatic and riparian habitat restoration and/or enhancement within the Lake Red Bluff area including the protection, restoration and enhancement of shaded riverine aquatic habitat (SRA).

2. The USFS should support and promote studies on the use of Lake Red Bluff (Including Sand Slough) by chinook salmon and steelhead adults and juveniles to increase specific knowledge and understanding about the importance of the area to these species. These studies should be coordinated with the U.S. Fish and Wildlife Service Office in Red Bluff, California.

3. The USFS should support and promote evaluations of the impacts of boat wake erosion and pedestrian traffic (e.g. before-and-after boating event monitoring) on riparian vegetation and shaded riverine aquatic habitat along Lake Red Bluff.

REINITIATION OF CONSULTATION

This concludes formal consultation on the action(s) outlined in the request for consultation. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained, or is authorized by law, and if (1) the amount or extent of incidental take statement is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, formal consultation shall be reinitiated immediately.

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